

Claims

We Claim:

1. A method of transferring metals and/or amines from a hydrocarbon phase to a water phase comprising:

adding to an emulsion of hydrocarbon and water, an effective amount of a composition to transfer metals and/or amines from a hydrocarbon phase to a water phase comprising at least one water-soluble hydroxyacid selected from the group consisting of glycolic acid, gluconic acid, C₂-C₄ alpha-hydroxy acids, poly-hydroxy carboxylic acids, thioglycolic acid, chloroacetic acid, polymeric forms of the above hydroxyacids, poly-glycolic esters, glycolate ethers, and ammonium salt and alkali metal salts of these hydroxyacids, and mixtures thereof; and

resolving the emulsion into hydrocarbon phase and an aqueous phase, where at least a portion of the metals and/or amines are transferred to the aqueous phase.

2. The method of claim 1 where in the adding of the composition, the composition additionally comprises a mineral acid.

3. The method of claim 2 where in the adding of the composition, the composition further comprises

down to about 1 wt.% water-soluble hydroxyacid; and
up to about 20 wt.% mineral acid.

4. The method of claim 2 where the method is practiced in a refinery desalting process and further comprises washing the emulsion with wash water and the amount of mineral acid is sufficient to lower the pH of the wash water to 6 or below.

5. The method of claim 1 where in the adding of the composition, the water-soluble hydroxyacid is present in the emulsion in an amount ranging from about 1 to about 2000 ppm.
6. The method of claim 1 where in the adding of the composition, the composition further comprises water or alcohol solvent.
7. A method of transferring metals and/or amines from a hydrocarbon phase to a water phase comprising:
 - adding to an emulsion of hydrocarbon and water, an effective amount of a composition to transfer metals and/or amines from a hydrocarbon phase to a water phase comprising at least one water-soluble hydroxyacid selected from the group consisting of glycolic acid, gluconic acid, C₂-C₄ alpha-hydroxy acids, poly-hydroxy carboxylic acids, thioglycolic acid, chloroacetic acid, polymeric forms of the above hydroxyacids, poly-glycolic esters, glycolate ethers, and ammonium salt and alkali metal salts of these hydroxyacids, and mixtures thereof, where the water-soluble hydroxyacid comprises from about 1 to about 100 wt.% of the composition and the composition further comprises a water or alcohol solvent; and
 - resolving the emulsion into hydrocarbon phase and an aqueous phase, where at least a portion of the metals and/or amines are transferred to the aqueous phase.
8. The method of claim 2 where the method is practiced in a refinery desalting process and further comprises washing the emulsion with wash water and the amount of mineral acid is sufficient to lower the pH of the wash water to 6 or below.

9. A composition for transferring metals and/or amines from a hydrocarbon phase to a water phase comprising:
 - a water-soluble hydroxyacid selected from the group consisting of glycolic acid, gluconic acid, C₂-C₄ alpha-hydroxy acids, poly-hydroxy carboxylic acids, thioglycolic acid, chloroacetic acid, polymeric forms of the above hydroxyacids, poly-glycolic esters, glycolate ethers, and ammonium salt and alkali metal salts of these hydroxyacids, and mixtures thereof; and
 - a mineral acid.
10. The composition of claim 9 where the composition additionally comprises at least one additional component selected from the group consisting of a water or alcohol solvent, a corrosion inhibitor, a demulsifier, a scale inhibitor, metal chelants, wetting agents and mixtures thereof.
11. The composition of claim 9 where the composition further comprises:
 - down to about 1 wt.% water-soluble hydroxyacid; and
 - up to about 20 wt.% mineral acid.
12. A composition for transferring metals and/or amines from a hydrocarbon phase to a water phase comprising:
 - a water-soluble hydroxyacid selected from the group consisting of glycolic acid, gluconic acid, C₂-C₄ alpha-hydroxy acids, poly-hydroxy carboxylic acids, thioglycolic acid, chloroacetic acid, polymeric forms of the above hydroxyacids, poly-glycolic esters, glycolate ethers, and ammonium salt and alkali metal salts of these hydroxyacids, and mixtures thereof; and
 - at least one additional component selected from the group consisting of a water or alcohol solvent, a corrosion inhibitor, a demulsifier, a scale inhibitor, metal chelants, wetting agents and mixtures thereof.

13. The composition of claim 12 where the water-soluble hydroxyacid comprises from about 1 to about 85 wt% of the composition.

14. A treated hydrocarbon emulsion comprising:

hydrocarbon;

water; and

a composition for transferring metals and/or amines from a hydrocarbon phase to a water phase comprising a water-soluble hydroxyacid selected from the group consisting of glycolic acid, gluconic acid, C₂-C₄ alpha-hydroxy acids, poly-hydroxy carboxylic acids, thioglycolic acid, chloroacetic acid, polymeric forms of the above hydroxyacids, poly-glycolic esters, glycolate ethers, and ammonium salt and alkali metal salts of these hydroxyacids, and mixtures thereof.

15. The treated hydrocarbon emulsion of claim 14 where the composition further comprises a mineral acid.

16. The treated hydrocarbon emulsion of claim 15 where the composition further comprises:

down to about 1 wt.% water-soluble hydroxyacid; and

up to about 20 wt.% mineral acid.

17. The treated hydrocarbon emulsion of claim 15 further comprising wash water and where the amount of mineral acid is sufficient to lower the pH of the wash water to 6 or below.

18. The treated hydrocarbon emulsion of claim 14 where the water-soluble hydroxyacid is present in the emulsion in an amount ranging from about 1 to about 2000 ppm.

19. The treated hydrocarbon emulsion of claim 14 where the composition further comprises at least one additional component selected from the group consisting of a water or alcohol solvent, a corrosion inhibitor, a demulsifier, a scale inhibitor, metal chelants, wetting agents and mixtures thereof.
20. The treated hydrocarbon emulsion of claim 14 where the hydrocarbon component contains more than 10 ppm iron or calcium.